Attitudes towards ICT Integration into Curriculum and Usage among University Lecturers in Vietnam

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Although the integration of information and communication technologies (ICT) into the curriculum was a crucial process in ensuring the quality of education, it has still not been given greater concern by the administrators and lecturers in some universities in Vietnam. The purpose of this descriptive-survey research is to determine lecturers' attitudes towards ICT integration into the curriculum and its use in the classroom. The research questions sought to measure the frequency of ICT use in teaching and learning among lecturers and their attitudes towards ICT integration into the curriculum to improve teaching; and to determine if a correlation existed between lecturers' attitudes towards ICT integration into the curriculum and their ICT use in the classroom. A population of 109 lecturers at a public university in Vietnam participated in this survey. The results of the correlation analysis identified a slightly moderate positive relationship between lecturers' attitudes towards ICT integration into the curriculum and their ICT use in the classroom. Although ICT was not highly used, lecturers recognized the benefits of ICT that they had chosen to incorporate into their teaching. These findings could be used for future research to promote positive educational changes through the integration of ICT into the curriculum in universities.

Key Words: Attitudes, Curriculum, ICT Integration into Curriculum, Integration, University Lecturer, Vietnam

INTRODUCTION

With its rapid development, information and communication technologies (ICT) is indispensable to human society. Its integration in schools or universities is essential in order to achieve various objectives, as well as to improve the quality of lessons. The development of technology has produced numerous ICT tools that are essential and useful in the human development process (Mbaeze, Ukwandu, & Anudu, 2010). ICT increasingly influences different aspects of our daily lives such as work, business, teaching, learning, leisure and health (Gulbahar, 2008). Since ICT is a crucial element in the advancement of society, every person should become technology-competent. Thus, all schools have to be equipped with the necessary ICT tools in order to provide

the next generations with the needed tools and resources to access, use and attain the expected skills for a modern society. This is extremely important with universities, where students are trained with the knowledge and skills to prepare for a new turning point in their life.

Universities have an important role in fulfilling the expectations of a new society. This role is characterized by being more open, flexible, and competitive (García-Valcárcel, 2009). Universities must think globally in order to respond to students' needs, create new relationships, design new programs, and rebuild their conceptions on the characteristics of learning environments to encourage innovation, experimentation, and lecturers' creativity. To satisfy these requirements, universities must promote the use of ICT. ICT could potentially facilitate the obtainment of relevant life skills that support the economic and information development process, if it is carefully integrated into education (Sara, Brown, David, Enos, Susan, Azra, & Leonard, 2010). According to Light (2009), ICT can help students deepen and construct their own knowledge, as well as develop complex thinking skills, when it is successfully integrated into a high-quality learning environment. Light also claimed that educators must know how to structure lessons, select resources, guide activities, and support the learning process, inasmuch as ICT alone cannot create this kind of teaching and learning environment.

The effective integration of ICT into the education system's curriculum is a complex process. This process involves not only technology but also curriculum and pedagogy, institutional readiness, teacher competencies, and long-term financing, among others (Tinio, 2003). Today, most countries around the world are focusing on approaches to integrate ICT into learning and teaching so as to improve the quality of education by emphasizing such skills as critical thinking, decision-making and handling of dynamic situations, working in groups, or communicating effectively (Anderson & Weert, 2002). Harvey (1983) predicted that the effective use of computers in education could be one of the important factors in determining a country's success in the future.

There are many factors that influence achieving a meaningful use of computer technology in the field of education, and educators' attitudes towards the use of technology in the teaching process is one of these factors. Research shows that the success of technology use in education mostly depends on educators' attitudes towards technology use (Albirini, 2006, Kluever, Lam, Hoffman, Green & Swearinges, 1994) and it is considered as an important element in predicting the use of technologies in educational settings (Albirini, 2006). Recent studies have shown that educators, who actually determine how technologies are used in the classroom, play an important role in the successful integration of educational technologies (Kagima, 1998). The development of educators' positive attitudes towards ICT is a key factor in the enhancement of computer integration and avoidance of their resistance to computer use (Watson, 1998). Moreover, Woodrow (1992) maintained that any successful transformation in educational practice requires the development of positive attitudes towards new technology. Therefore, it can be concluded that the frequency and effectiveness of ICT usage in the classroom is largely related to educators' attitude.

Educational systems around the world are becoming increasingly pressured to apply the new ICT tools to their curriculum to provide students with the knowledge and skills that they need in the 21st century. The challenge that our educational systems are encountering is how to transform the curriculum and teaching-learning process to provide students with the requisite skills to function effectively in a dynamic and continuously changing environment. ICT provides powerful tools that may help in transforming the present isolated, teacher-centered, and text-bound classrooms into rich, student-focused interactive knowledge environments. To meet these challenges, learning institutions and schools or universities must incorporate the new technologies and appropriate ICT tools for learning (Shuva, 2010).

Since the tendency of using ICT in teaching and learning strongly depends on the attitudes of the lecturers, the present study aims to investigate lecturers' attitudes towards ICT integration into the curriculum, specifically in the teaching and learning process at a public university in Vietnam. This university is the only university in one Vietnam's major cities. It has a bigger role to play in terms of educating a great number of students for various institutions and organizational workforce. Therefore, the quality of students' outcomes is very important and is influenced by the effectiveness of lecturers' teaching methods. As a result, this requires that the lecturers have a positive attitude towards ICT integration and implementation into the curriculum. ICT is a powerful tool to support innovative methods of teaching, learning, and support innovation management education, thus contributing to improving the efficiency and quality of education.

Today, although ICT integration into the curriculum is a crucial process in ensuring the quality of education, it has still not been given adequate concern by the administrators and lecturers in some universities in Vietnam. Therefore, this study aims to measure the extent to which the educators have positively considered the integration of ICT into the curriculum, focusing on their teaching and learning environment to improve and educate the students. This study is crucial, especially for the university's leaders, as "only as education leaders understand the issues associated with the effective use of technology in instruction, they can effectively guide the process" (Chapman & Mählck, 2004). Therefore, given appropriate encouragement, policies and training programs could be presented to the lecturers, who could plausibly lead them to the right attitudes towards ICT integration into the curriculum. To fulfill the objectives of this study, the researcher set up some research questions. The research questions for this study are as follows:

1. What is the frequency of ICT use in teaching and learning among lecturers in the university under study?

2. What are the lecturers' attitudes towards ICT integration into the curriculum to improve the teaching and learning process?

3. What is the relationship between lecturers' attitudes towards ICT integration into the curriculum and the use of ICT in the classroom?

LITERATURE REVIEW

In a higher education context, "curriculum" is a notion worthy of exploration and elaboration. It plays as "a construct that could both consolidate such initiatives undertaken to date and highlight coherent strategies or foci for the provision of more valuable and meaningful learning opportunities in higher education" (Hicks, 2007). According to Gaff and Ratcliff (1997), the curriculum in universities is now "an intellectually rich concept that may be viewed and analyzed from many different vantage points. One can look at purposes, experiences, or outcomes of the curriculum". Ratcliff also claims that "the vision of what is a curriculum is heavily shaped by disciplinary values, educational philosophy, the diversity or homogeneity of students enrolled, and the social and institutional context". Besides, Mortimer and Sathre (2007) suggested that curriculum is a corporate responsibility that the collective faculty of the educational institution must share. They also note that "A program of study is not just a faculty responsibility, but a responsibility of the institution as a whole". Many faculties prefer to select the courses and the content they want to teach, and how they want to teach them, in part, based on the nature of academic freedom and autonomy (Innes, 2004). Furthermore, Candy, Crebert and O'Leary (1994) determined that, "the concept of curriculum in the university setting was unfamiliar to many academics, which developed and taught units or courses to reflect their own interests with little attention to ensuring coherence or identifying the aims and objectives of teaching

In view of the aforementioned area of discussion, it is of utmost importance that educators be made aware of the value of ICT, as well as how to incorporate it in their classrooms. Integrating ICT into the curriculum is more complex than we think: thus, we should strive to further propose ways through which to implement it into classrooms. We will need to adapt and accommodate in order to ensure that what is taught will change as much as how it is taught rather than use computers to deliver the existing curriculum (Mojkowski, 1987). It is essential to focus on the pedagogy and ensure that the instruction is tied to the appropriate media to have the effective use of technology (Ferdig, 2006). We need to build more complex curricular and instructional contexts in which technology is already embedded in order to parallel the existing concerns for access to the curriculum, and to achieve the learning outcomes of the curriculum (Woodward & Cuban, 2001). According to Shuva (2010), the chief purpose of ICT integration into a curriculum is to create an environment, not only for interaction among educators and students, but also for the utilization of technological facilities. There exists a myriad of important issues in the integration of ICT into the curriculum in education - a multifaceted process, some of which include the following: educational policy and planning, curriculum and pedagogy, infrastructure, institutional readiness, educator competencies, capacity building, and financing. These issues should be considered by policymakers, educators, and education administrators. There is not one single solution for defining the best level of ICT integration in the educational system (Kisla, Arikan et al., 2009). There are, however, certain factors which aid in easing the transition from traditional to ICT classrooms, one of which being lecturer's attitudes.

Lecturers' attitudes towards ICT integration into the curriculum play a crucial role in the teaching and learning process, especially when it comes to positive attitudes. Educators who exhibit positive attitudes towards ICT can be successful in the integration of ICT into science, technology curricula, and classroom practices (Milan, Muhammet, Kursad, & Tasar, 2010). If ICT is used under the right conditions, including suitable sources, training methods, and means of support, it can have a useful effect on teaching and learning. ICT also provides the potential to meet the learning needs of every individual student, to promote equal opportunities, to offer learning materials, as well as to encourage the interdependence of learning among learners (Leach, Ahmed, Makalima & Power, 2005). Attitudes affect educators' behaviors and have a considerable effect on reflecting and implementing change as well as on openness to new experiences. Based on previous research, Kzenek and Christensen (2008) stated that attitudes are significant factors in the integration and diffusion of ICT in the classroom. Lecturers are an important group of users who play a necessary role in the successful implementation of new information technologies with universities wishing to integrate ICT into their curriculum (Agbonlahor, 2006). Therefore, a key challenge for universities is getting information technology use into the hands of lecturers and equipping them with how to use this technology (Gates, Moore, Oberlin, Rusiecki, & Wascom, 2000).

There are various factors that lead to ineffective ICT integration into the curriculum in the teaching and learning process. A lack of resources, such as equipment, unsuccessful experiences, and negative attitudes and beliefs are identified as reasons for insufficient ICT integration in education (Ertmer, 2005; Park & Son, 2009).

METHOD

The researcher uses descriptive-survey research in this study to determine lecturers' attitudes towards ICT integration into the curriculum and their practice in the classroom. "The various approaches to survey research have the same purpose: gathering opinions, beliefs, or perceptions about a current issue from a large group of people" (Lodico, Spaulding et al., 2006). Survey research design is a procedure in quantitative research in which investigators conduct a survey with a sample or population of people in order to describe the attitudes, opinion, behaviors, or characteristics of that sample or population (Creswell, 2005; Ary, Jacobs, Razavieh, & Sorensen, 2006).

In an underdeveloped country like Vietnam, universities play an important role in developing the people. This role is characterized by being more open, flexible, and competitive (García-Valcárcel, 2009). As every single university asserts its own unique identity in accordance with its specific location and needs, understanding problems in each individual university is of utmost importance here. A public university, which is the sole institution of higher learning in its city, was selected for the study. It was established in 2006 with five faculties and one department. The university is located in a poor city in which the primary mode of subsistence is husbandry.

Since it is a relatively small university with a meager number of lecturers, the researcher decided to use the population - all members of any well - defined class of people, events, or subjects - for this study (Ary, Jacobs et al., 2006). The population for this study is a total of approximately 109 lecturers. According to Ary, Jacobs et al. (2006), "correlation studies do not require extremely large samples." Thus, the selected population size is appropriate for this research.

The survey instrument consists of two sections. The first section gathered information related to lecturers' current use of ICT. This section uses a rating scale of 1 to 4 and consists of 15 items that were adapted from Chowdhury (2009) to measure the frequency of ICT use by lecturers. These items described various kinds of ICT tools that lecturers used in the teaching and learning process.

The second section, which was adapted from Proctor, Watson, Glenn, Peter, & Paul (2006) and used to measure the attitudes of lecturers towards ICT integration into the curriculum, consisted of 20 items and used a 4-rating scale.

This instrument was evaluated in terms of its face and content validity, criterion-related validity, and construct-related validity (Fraenkel & Wallen, 2006) by two lecturers, one of which is an expert in the field of curriculum development and the other of which is a specialist in the field of technology. With feedback from these experts, the researcher revised the instrument and made the essential corrections, which were related to grammar and content, to insure that all items in the instrument would correctly measure what needed to be measured in the study.

In addition, to ensure that all lecturers at the university had a complete understanding of the instrument used, the questionnaire was translated from English to Vietnamese, and then back to English. The Vietnamese version of the questionnaire was used in the pilot as well as in the main study.

For the reliability measurement process, the researcher did a pilot study by providing the questionnaire to 30 lecturers. These lecturers were not included in the main study. The pilot study was carried out in two weeks with 30 lecturers in the same university. In the piloting process, the researcher allowed the pilot participants to write comments, suggestions, or questions they had about the survey (Lodico, Spaulding et al., 2006).

In the data analysis process, the research question 1 concentrated on the frequency of ICT use in the teaching and learning process among lecturers by calculating the means and standard deviations with 95% confidence intervals. Next, in research question 2, descriptive statistics was performed by calculating the means and standard deviations of all the attitude items with a 95% confidence interval to investigate the lecturers' attitudes towards integrating ICT into the curriculum in the teaching and learning process.

In addition, Pearson's r correlation was used with the hypothesis for question 3 to perform the relationship between lecturers' attitudes towards ICT integration into the curriculum and their current use of ICT.

RESULTS

In this study, the researcher used the population of the 109 lecturers in the university. All of the 109 lecturers completed the questionnaire. Based on responses from the lecturers, research questions 1 to 3 can be answered through statistical analysis.

Research question 1: What is the frequency of ICT use in teaching and learning among lecturers in the university under study?

The level of current use of ICT was determined by lecturers through the selection of 15 items (with a rating scale of 1 to 4), which included ICT tools that lecturers can use to support their teaching process. The values of frequency, percent, and mean of current use of ICT tools were indicated in Table 1. The mean of the current use of ICT tools ranged from 1.22 to 3.46, where a mean above 3.0 showed a high usage of ICT tools in the teaching and learning process.

Table 1: Mean for the use of ICT tools

Questions	M	SD
Productivity tools	3.06	0.66
Multimedia presentation tools	3.40	0.65
Internet, web applications	3.19	0.74
Content specific software	2.77	0.82
Drill and practice software	2.46	0.86
Games and simulations	1.69	0.78
Wireless handheld devices	1.36	0.66
Course website	1.98	0.68
Imaging Devices	2.25	0.68
Computer projection device	3.06	0.64
Email or other Internet communication tools for assignment/project feedback	3.46	0.70
Authoring tools	2.34	0.91
Learning management systems	1.94	0.76
Web publishing tools	1.65	0.69
Interactive whiteboard	1.22	0.57

With the survey results, the researcher established three mean groups in which the mean of the use of ICT tools ranged from 1.7 and below, demonstrating very rare usage of ICT among lecturers. The mean of the use of ICT tools ranged between 1.7 and 2.7, which indicates that lecturers use ICT sometimes. The mean of the use of ICT tools ranged from 2.7 and above, demonstrating that lecturers often used ICT.

Most lecturers indicated that they often used productivity tools (M=3.06), multimedia presentation tools (M=3.40), Internet and web applications (M=3.19), content-specific software (M=2.77), computer projection devices (M=3.06), and email or other Internet communication tools for assignment/project feedback (M=3.46) in their teaching. On the other hand, lecturers rarely used games and simulations (M=1.69), wireless handheld devices (M=1.36), web publishing tools (M=1.65), or interactive whiteboards (M=1.22) in their teaching. According to the results, the use of email or other Internet

communication tools for assignment/project feedback had the largest mean value, and that of interactive whiteboard had the smallest mean value.

Research question 2: What are the lecturers' attitudes towards ICT integration into the curriculum to improve the teaching and learning process?

To answer research question 2, the researcher conducted descriptive statistics to consider lecturers' attitudes towards ICT integration into the curriculum in the teaching and learning process. The values of frequency, percent, and mean of attitudes towards integrating ICT are indicated in Table 2. The mean for attitudes towards ICT integration into the curriculum ranged from 2.73 to 3.55, and the mean of above 3.0 indicated a positive attitude towards ICT integration into the curriculum in the teaching and learning process (as the instrument has a rating scale of 1 to 4).

Table 2: Mean for lecturers' attitudes towards ICT integration into the curriculum

Questions	M	SD
ICT helps students acquire the knowledge, skills, abilities and attitudes to deal with on-going technological change	3.10	0.58
ICT helps students develop functional abilities in a specified curriculum area	2.99	0.59
ICT helps students synthesize their knowledge	3.13	0.51
ICT helps students actively construct their own knowledge in collaboration with their peers and others	3.48	0.59
ICT helps students actively construct knowledge that integrates curriculum areas	3.22	0.63
ICT helps students develop deep understanding about a topic of interest relevant to the curriculum areas being studied	3.07	0.56
ICT helps students develop a scientific understanding of the world	3.23	0.50
ICT helps students provide motivation for curriculum tasks	3.05	0.60
ICT helps students plan and/or manage curriculum projects	2.73	0.62
ICT helps students integrate different media to create appropriate products	2.81	0.66
ICT helps students engage in sustained involvement with curriculum activities	2.91	0.62
ICT helps students support elements of the learning process	3.52	0.52
ICT helps students demonstrate what they have learned	3.12	0.56
ICT helps students undertake formative and/or summative assessment	2.77	0.54
ICT helps students acquire awareness of the global implications of ICT-based technologies on society	3.09	0.63

Three mean groups were established based on the results, with the mean for the attitudes of ICT integration into the curriculum ranging from 2.8 and below, demonstrating disagreement. The mean for the attitudes of integrating ICT into the curriculum ranged between 2.8 and 3.2, demonstrating moderate agreement, and the mean for the attitudes of integrating ICT into the curriculum ranged from 3.2 and above, demonstrating strong agreement.

Most lecturers reported disagreeing with the statements that ICT integration into the curriculum will help students plan and/or manage curriculum projects (M=2.73) and ICT integration into the curriculum will help students undertake formative and/or summative assessment (M=2.77). On the other hand, lecturers showed strong agreement

with the statements that ICT integration into the curriculum will help students actively construct their own knowledge in collaboration with their peers and others (M=3.48), ICT integration into the curriculum will help students actively construct knowledge that integrates curriculum areas (M=3.22), ICT integration into the curriculum will help students develop a scientific understanding of the world (M=3.23), ICT integration into the curriculum will help students support elements of the learning process (M=3.52), and ICT integration into the curriculum will help students communicate with others locally and globally (M=3.55). The results indicated that the beliefs that ICT integration into the curriculum will help students plan and/or manage curriculum projects, had the smallest mean (M=2.73), and ICT integration into the curriculum will help students communicate with others locally and globally, had the largest mean (M=3.55).

Research question 3: What is the relationship between lecturers' attitudes towards ICT integration into the curriculum and the use of ICT in the classroom?

Table 3: Relationship between lecturers' attitudes towards ICT integration into the curriculum and ICT use in the classroom

		Lecturers' attitudes towards ICT integration into curriculum
ICT Use in the classroom	Pearson Correlation	.368**
	Sig. (2-tailed)	.000
	N	109

**. Correlation is significant at the 0.01 level (2-tailed).

With research question 3, a Pearson's r correlation was calculated to determine whether there was a relationship between lecturers' attitudes towards ICT integration into the curriculum and their use of ICT in the classroom. The results of the correlation indicated that r (107) = .368, p < .01 (Table 3), revealing a slightly moderate positive relationship between lecturers' attitudes towards ICT integration into the curriculum and their use of ICT in the classroom (Johnson and Nelson, 1986).

According to the results, the relationship between lecturers' attitudes towards ICT integration into the curriculum and their use of ICT in the classroom was slightly significant. Therefore, the researcher concluded that there was a slightly positive correlation between lecturers' attitudes towards ICT integration into the curriculum and their use of ICT in the classroom. In other words, when lecturers' attitudes towards ICT integration into the curriculum increased, their use of ICT in the classroom also increased, and *vice versa*.

DISCUSSION

The results from the lecturers' responses in this study on the frequency of ICT use in teaching and learning among lecturers were similar to the findings of Keengwe (2006). Keengwe found that "faculty often used productivity tools, multimedia presentations, web browsers, computer projection devices, course management tools and email". Keengwe also found that "faculty rarely used web publishing, content-specific software, imaging devices, discipline devices and taught in multimedia classrooms". These results were also confirmed by the study of Brill and Galloway (2007) when they

found that overhead projectors and the Internet are the top technologies used by instructors. Further studies could investigate why emerging ICT applications such as games and simulations, wireless handheld devices, and web publishing tools are not widely-used by lecturers in their classrooms. The important role of communication between instructors and students, and the popular use of e-mail and other communication tools supported the findings in Brill and Galloway (2007).

Despite the potential of ICT tools such as games and simulation, wireless handheld devices, and web publishing tools, the findings showed that most of the lecturers who participated in the research rarely used them in their teaching. The survey indicated that the lecturers did not take full advantage of what ICT offered in terms of its instructional benefits. This consideration has a potentially significant influence on the professional learning strategies and programs for lecturers at universities. The most positive result of this section is that lecturers are incorporating ICT into their instruction, even though at low levels of use.

 The clear implication of these findings is that although ICT is not used currently at the highest levels, lecturers do recognize the benefits of the ICT components that they have chosen to incorporate into their teaching. These findings on lecturers' attitudes towards ICT integration into the curriculum in the teaching and learning process can be connected to Rogers's (2003) theory of diffusion of innovation, which showed that "relative advantage, compatibility, complexity, trialability, and observability are the most important characteristics of innovations from which new innovations are adopted". Findings that are related to the influence of ICT on teaching are seen in Brill and Galloway's (2007) study; they concluded that "most instructors feel that the technology they currently use in their classrooms has a positive influence on their teaching and students' learning". In another study, Nicolle (2005) found that lecturers of faculties recognized that ICT integration can enhance teaching and learning. Although lecturers recognized the potential benefits of ICT, the lack of usage indicates alarming issues. Future investigations of this possibility are needed to provide more informed answers.

An analysis of the relationship between lecturers' attitudes towards ICT integration into the curriculum and their use of ICT in the classroom suggests that when lecturers' attitudes towards ICT integration into curriculum increase, there is possibility which their ICT use will also increases, and vice (r=+0.368). Loague (2003) indicated a positive relationship between technology integration and professors' beliefs about technology. Furthermore, Hall and Elliott (2003) show that "the rate at which most institutions are able to integrate new technology into the teaching process is primarily dependant on the resources and willingness of faculty members to adopt new technology".

These findings might play an important role in the future development of ICT plans, professional development plans for faculties and support staff, and ICT integration into the curriculum to promote an effective learning environment. In order to provide the

essential technical and instructional support, lecturers must have a proper understanding of this relationship. These findings can be resources for future studies.

The findings of this study related to the correlations between lecturers' attitudes towards ICT integration and their ICT use in the classroom included some significant conclusions, one of which is the following: the higher the lecturers' attitudes towards ICT integration into the curriculum, the more ICT use there was in the classroom. These findings were in direct correlation with most previous research. For example, in Loague (2003) indicated, "The degree to which technology was being integrated into instruction was dependent upon the acceptance/use level of the professor". Besides, Hall and Elliott (2003) showed, "The rate at which most institutions are able to integrate new technology into teaching process is primarily dependant on resources and willingness of faculty members to adopt new technology".

Trends and issues related to the integration of ICT into the curriculum in the teaching and learning process can be explored by future research by new generations of lecturers. Lecturers' professional development in educational technology, technology integration models, and modern instructional and learning theories, as well as their use of ICT to improve teaching and learning, need to be investigated in future studies.

CONCLUSION

In the final analysis, it can be reasonably ascertained that the teaching and learning process can be greatly ameliorated though the incorporation of ICT into the curriculum. As is evident in the aforementioned discussion, even though lecturers recognized the potential of ICT, but not necessarily they will put integration of ICT into their practice. ICT alone will not improve the effectiveness of teaching and learning; they need to be integrated into the curriculum through a systematic approach.

Thus, if the field of education is to meet the ever-growing demands of modern life and the exponential growth of technological advancement, educators will invariably need to creatively find ways of incorporating ICT into their curricula.

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